LABORATORY STUDY ON THE EFFECT OF SULFATE IONS ON REBAR CORROSION.

Al-Tayyib, A.J. , Somuah, S.K. , Boah, J.K. , LeBlanc, P. , Al-Mana, A.I.

Cement and Concrete Research
Vol. 18, Issue.5, 1988

Abstract: This paper presents the findings of a laboratory investigation in which the role of sulfate ions on reinforcing steel corrosion has been investigated. 1020 carbon steel specimens were immersed in saturated Ca(OH)//2 solutions containing different concentrations of sulfate ions and the corrosion rate was determined by linear polarization resistance and A. C. impedance techniques. The tests were carried out at 22 degree C and 50 degree C. The test results indicate that in the presence of sulfate ions and at 22 degree C, active corrosion results from modification of the protective passive film to a sulfate film which is less protective than that of the original iron oxide film. Moreover, the combined effect of sulfate ions and elevated temperature results in a seven fold increase in corrosion rate.